

eralized. If the disease had existed ten days, one should not expect any results from the injections.

Kocher, of Bern, reported one case in which recovery followed the use of the injection. He was very favorably impressed with the method, but did not believe that we ought to expect too much. The antitoxin was in all probability only able to utilize the toxins in the peripheral nerves into which it was injected.

Küster, in closing the discussion, said that we should limit the use of the method to the first days after the appearance of the symptoms, and advised using it as early as possible.—*Proceedings of the German Surgical Congress, 1905.*

**IV. Present Status of Spinal Anæsthesia.** By PROFESSOR AUGUST BIER (of Bonn). The old method of spinal anæsthesia with pure cocaine was not a competitor of general anæsthesia on account of its dangers and its unpleasant after-effects. The older substitutes of cocaine did not relieve this condition. A change has taken place, first, through the addition of suprarenal preparations, the best of which are paranephrin and suprarenin. These limit the dangers of cocaine considerably, but unfortunately they do not obviate the disagreeable accompanying and after-effects which cocaine causes, such as headache, backache, and vomiting. Second, stovain has been substituted for cocaine. It was first discovered by the French chemist, Fournier. Compared with cocaine, it has very insignificant after-effects. Bier considers stovain the best agent to use at the present time for spinal anæsthesia, but advises that it should always be used in connection with adrenal preparations.

The great advantage of spinal anæsthesia is that it is excellently borne by weak persons and those who have endured a good deal of suffering, as well as by the aged. Formerly, it was impossible to secure the necessary anæsthesia after the introduction of the anæsthetic agent through lumbar puncture in about 6 to 10 per cent. of the cases. This can be reduced almost to nothing through painstaking technique.

V. CZERNY, of Heidelberg, after discontinuing the use of cocaine, began to use stovain, and has been very well satisfied with the results. The lumbar puncture should be made between the second and third lumbar vertebra, about half a syringeful of the spinal fluid aspirated, and then 0.06 milligrammes of a 10 per cent. solution of stovain injected.

A. HERMES, of Berlin, reported ninety cases operated on by Sonnenberg, of which twenty-two were laparotomies. Four times it was impossible to obtain any anæsthesia. He considers this more of a matter of individuals, as it happened twice in the same individual. In abdominal operations a cold, clammy sweat occurred a number of times, accompanied by pallor and small pulse, so that it was necessary in one case to give camphor. Headache was a frequent after-effect, in one case lasting eight days, and in another eight weeks. The doses varied from 0.04 to 0.06 of stovain. He considers that the best indication for the application of spinal anæsthesia is in patients who are seventy-five or above, in spite of cardiac or pulmonary disease.

SILBERMARK, of Vienna, had operated 300 cases under spinal anæsthesia. His observations lead him to believe that the decrepit, emaciated individuals bear the method better than young, vigorous persons. He considers the method without danger if tropacocaine or encain or stovain is used. He employs the sitting position of the patient, never elevates the pelvis. Anæsthesia failed to show in about 4 per cent. of the cases. Of these, one was after the use of stovain. He believes this is due more to errors in technique than to anything else. In 200 cases he allowed from 3 to 4 cubic centimetres of the spinal fluid to escape. In spite of this, over 20 per cent. had symptoms of a bulbar nature, such as vomiting, etc., during the operation. Since that time he only withdraws about 1 cubic centimetre of the spinal fluid and injects only 2 cubic centimetres of the anæsthetizing fluid, since which the cerebral symptoms are very rare. He believes that the withdrawal of much spinal fluid causes a lowered amount of pressure in the spinal canal, and as a result of this the

anæsthetizing liquid is rapidly carried to the medulla, causing bulbar symptoms. If the pressure is not lowered, the anæsthetic remains at the point at which it was injected, and is fully absorbed in the immediate vicinity of the puncture.

F. NEUGHAUER reported 480 cases of spinal anæsthesia. The majority of these were carried out by the use of tropacocaine, but eucain, stovain, and tropacocaine were also used in gelatin. He has never observed any alarming symptoms nor any serious after-effects. Tropacocaine gave the best results, although it was followed by headache in 30 per cent. of the cases. His observations have taught him that eucain and stovain caused headache and vomiting much more frequently than tropacocaine. The suggestion of Klapp, that the anæsthetic substances should be injected, dissolved in media which permit only of slow absorption, such as gelatin, seems to hold forth great promise for the future. Anæsthesia begins in the perineum, extends to the posterior, and then to the anterior aspects of the extremities, and finally to the inguinal region. He would exclude laparotomies from this method of anæsthesia altogether, since larger doses are required, and there is more danger of intoxication.

PREINDLSBERGER, of Sarajewo, has performed spinal anæsthesia in 305 cases. He gave up using cocaine on account of some unpleasant experiences. He only uses spinal anæsthesia in operations from the lower abdominal regions down, such as herniotomies, operations on the urinary organs, on the rectum, and lower extremities. Out of 260 cases the anæsthesia failed to show itself in nineteen. In fourteen it was necessary to administer light general anæsthesia in addition, and in four, on account of the restlessness of the patient, it was necessary to use a general anæsthetic.

Concerning bad effects, he observed a severe collapse which rapidly disappeared in one case; six times mild collapse, with symptoms such as pallor, feeling of faintness, sweating, and small pulse, and in five cases rise of temperature as high as  $105^{\circ}$  F. The most frequent after-effect was headache. He used tropa-

cocaine in doses of 0.04 to 0.07. The patients were all injected while lying on the side, according to the method of Bier, and the pelvis slightly elevated after the injection. The solutions were sterilized in a water-bath, glass vials, and were again sterilized before using. He uses a metal syringe, which can be sterilized and taken apart completely.

AUGUST BIER, in closing the discussion, said that injections and operations in the Trendelenburg position should only be made when three drops of paraneuphrin solution have been added to the anæsthetic solution, otherwise collapse is to be feared. Failure of getting anæsthesia, such as reported by Czerny and Hernes, was to be ascribed to the faulty technique. He would advise not injecting while the spinal fluid is running off slowly, but while it was running rapidly. He does not use spinal anæsthesia for laparotomies. He did not consider spinal anæsthesia a fully perfected method. It was to be recommended for old, decrepit people, especially for operations upon the perineum and rectum. One could inject larger amounts of greater dilution, but there was always danger of collapse. He always permitted the patient to choose whether he wished to have the operation performed under spinal anæsthesia or under general.—*Proceedings of the German Surgical Congress, 1905.*

V. Permanent Results from the Operative Treatment of Basedow's Disease. DR. FRIEDHEIM, of Hamburg-Eppendorf, reported twenty cases of Basedow's disease which had been operated on by Kimmell, either by excision or resection of a portion of the goitre, or partial ligation of the afferent vessels. All of the cases had well-marked symptoms, such as exophthalmos, goitre, and palpitation, as well as marked emaciation, and the usual disturbances in the nervous system, respiratory and digestive apparatus. All the patients were women, and of the twenty operated on fourteen have fully recovered, and the interval which has elapsed between the operation and the last examination was ten to fifteen years in five cases, five to ten years in seven cases,